

State of California
Regional Water Quality Control Board
North Coast Region

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October 8, 2002

EXECUTIVE OFFICER'S SUMMARY REPORT
8:30 a.m., October 24, 2002
Regional Water Quality Control Board
5550 Skylane Boulevard, Suite A
Santa Rosa, California

ITEM: 7

SUBJECT: Update on Klamath River Fish Kill

Introduction

Beginning the week of September 16th, reports of dead and dying fish in the lower reaches of the Klamath River began to reach biologists from the Yurok Tribe, U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Game (DFG).

Early accounts were sketchy, but thousands of fish carcasses could be seen piled up on the beaches and bars, stranded on the riffles or floating down the river. Most were adult fall-run chinook salmon, but there were some steelhead trout and a small number were coho salmon. Coho salmon were listed as threatened in 1997 under the federal Endangered Species Act and considered by the California Fish and Game Commission to warrant listing as a threatened species under the California Endangered Species Act.

As the biologists began their assessment of the nature and extent of the massive die-off, the numbers of fish affected became the largest ever seen in the Klamath Basin. Final counts are still underway, but current estimates of dead fish are close to 24,000 individuals. The current count consists primarily of chinook salmon, but steelhead trout, coho salmon and suckers make up a small percentage of the total. At this time USFWS is processing the data from the field surveys and will have a more definitive count and species distribution available in the near future.

The immediate cause of the fish kill was not apparent. There were various hypotheses among the Tribal and agency scientists and the general public about the various possible contributing factors.

After consultation with biologists from the Yurok Tribe and the USFWS, Regional Board (RB) staff responded to the scene on September 26th. As water quality data was lacking in the reach of the kill, and no causal factor(s) were yet determined, we decided to collect surface water grab samples at five stations in the reach below Tectah Creek on 9/26/02 and run scans for total nutrients, organochlorine pesticides and PCBs, Triazine pesticides and herbicides and Glyphosate (Roundup). In addition, two water quality dataloggers programmed to measure and record dissolved oxygen, pH, specific conductivity and

temperature, were provided to the Yurok Tribe for deployment in the river on the next day.

The following day, RB staff accompanied a USFWS biologist and collected additional water quality samples and measured field parameters in the reach from Martins Ferry Bridge to Orleans as well as the Trinity River at Weitchpec.

The analyses of the first days samples indicate no apparent water quality issues with the exception of the detection of Glyphosate (Roundup) at a concentration of 45 ppb in the mainstem of the Klamath immediately downstream of the US 101 Highway bridge. The origin of the Glyphosate (Roundup), a commonly used herbicide, is unknown and being investigated.

The analyses for the samples collected on September 27 have not been completed but are expected within the week. Water quality field parameters measured during sample collection were nominal.

To date we have not identified a definitive reason for the fish kill. Fisheries biologists are investigating a number of possible contributing factors in order to determine the cause(s) of the fish kill. However, this much is known (M.Belchik, pers com.):

- The run was quite large and exceeded the early 128,000 fish prediction
- The fish were large and the run was dominated by four-year old fish instead of the usual three-year olds
- For some reason, the up-stream migration appeared to be partially stalled with large numbers of fish densely congregating in the estuary and in the reach below Blue Creek
- Many of the fish were infected with Columnaris disease (Gill Rot), a skin and gill infection caused by the bacteria *Flexibacter columnaris*. Columnaris is a common hatchery disease and affects almost all hatchery fish
- Many of the fish were also infected with *Ceratomyxa Shasta*, a protozoan parasite
- River flows were lower than those of last year
- Maximum peak hourly water temperatures, while warm (approximately 70° F at Terwer), did not appear to exceed lethal limits (USFWS preliminary data).

In an attempt to induce the fish to move upstream and provide relief from overcrowded conditions, which were likely contributing to the rapid spread of disease, the National Marine Fisheries Service (NMFS) requested the Bureau of Reclamation (BOR) release additional Klamath Project water into the system from Iron Gate Dam. At midnight, September 27, the BOR agreed to ramp up flows out of Iron Gate Dam from 760 cfs to 1300 cfs for a period of 14 days.

Since the emergency release regime was not foreseen, its impacts on the system were unknown. There was concern on the part of DFG and others that the release might lead to depletion of the water above the thermocline in Iron Gate Reservoir. This, in turn, might lead to the release of water containing low levels of dissolved oxygen and high

levels of nutrients resulting in negative water quality impacts in the reach below the dam. The flows are scheduled to be ramped down from 1300 cfs to 879 cfs late next week.

In an effort to rapidly coordinate agency response and data gathering efforts surrounding the emergency flow regime and its effects on the system, DFG convened a conference call on Thursday, October 3rd among the BOR, Redding DFG Office, PacifiCorp, USFWS, NMFS, NCRWQCB, and Watercourse Engineering (Mike Deas consultant to PacifiCorp). PacifiCorp operates power generating facilities from Upper Klamath Lake to Iron Gate Dam.

At that time the most recent Iron Gate Reservoir profile data indicated a sufficiently large pool of water above the thermocline to handle the scheduled releases without water quality problems. However, continued profile measurements will be made to assess the reservoir condition during the emergency release.

In addition, the various agencies will institute increased water quality surveillance monitoring in the reach below Iron Gate Dam. The Regional Board has contributed four dataloggers to this effort to be deployed by DFG.

Conclusion

As of now, no clear cause or mechanism has been identified as directly responsible for the fish kill. Most biologists feel that there were a number of causal factors acting together. There is a considerable amount of data currently being gathered and processed by a number of agencies. More definitive answers should emerge in the coming weeks as this information is assimilated.

Anecdotal evidence from the field indicates the pulse flow regime is having a positive effect and that the fish are dispersing and moving upstream (M.Belchik, pers com.).